

DESCRIPTION OF A NEW PANGASIID CATFISH FROM SOUTH-EAST ASIA (SILURIFORMES)

by

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ABSTRACT. - *Pangasius kunyit* sp. n. is described on specimens from Indonesia, Malaysia and Vietnam. The new species belongs to the subgenus *Pangasius* (*Pangasius*). It is recognised from the other species of this subgenus by the combination of the following characters: a large, somewhat spatulated head (head depth 48.0-54.7% HL; head width 70.7-76.6% HL; snout length 48.0-53.4% HL), a short palatine toothplate (palatine length 10.0-12.8% HL; palatine width 4.0-5.2% HL) and a very robust dorsal spine (width of spine 9.25-11.2 times in its length).

RÉSUMÉ. - Description d'une nouvelle espèce de Pangasiidae du Sud-Est Asiatique (Siluriformes).

Pangasius kunyit sp. n. est décrite d'Indonésie, de Malaisie et du Vietnam. La nouvelle espèce appartient au sous-genre *Pangasius* (*Pangasius*). Elle se distingue des autres espèces de ce sous-genre par la combinaison des caractères suivants: une tête large, en forme de spatule (épaisseur de la tête 48,0-54,7% HL; largeur de la tête 70,7-76,6% HL; longueur du museau 48,0-53,4% HL), une bande dentaire palatine fine (longueur de la bande palatine 10,0-12,8% HL; largeur de la bande palatine 4,0-5,2% HL) et une épine dorsale robuste (largeur de l'épine 9,25 à 11,2 fois dans sa longueur).

Key-words. - Pangasiidae, *Pangasius kunyit*, Indonesia, Malaysia, Vietnam, New species, Taxonomy.

Pangasiids are riverine catfishes generally occurring in freshwaters from Pakistan to the Indonesian Archipelago and Indochina. Morphologically, they are recognised by a laterally compressed body, the presence of two pairs of barbels and an adipose fin, a long anal fin (25-46 fin rays) and a short dorsal fin with one or two spines and 6 to 8 soft rays (Teugels, 1996; unpubl. data).

Roberts and Vidthayanon (1991) recognised two genera: *Helicophagus* Bleeker, 1858 with two species and *Pangasius* Valenciennes, 1840 including 19 species. The much narrower mouth and snout and the absence of palatine teeth are diagnostic characters for the former. Based on internal anatomy and palatal toothplate morphology Vidthayanon (1993) divided *Pangasius* in four subgenera: (1) *Pangasius* (*Neopangasius*) Popta, 1904 with palatal teeth in a single large patch and with high vertebral counts; four species are included in this subgenus: *P. humeralis* Roberts, 1989, *P. kinabatanganensis* Roberts & Vidthayanon, 1991, *P. lithostoma* Roberts, 1989 and *P. nieuwenhuisii* Popta, 1904; (2) *Pangasius* (*Pteropangasius*) Fowler, 1937 with the abdomen keeled for its entire length and only including *P. pleurotaenia* Sauvage, 1878; (3) *Pangasius* (*Pangasianodon*)

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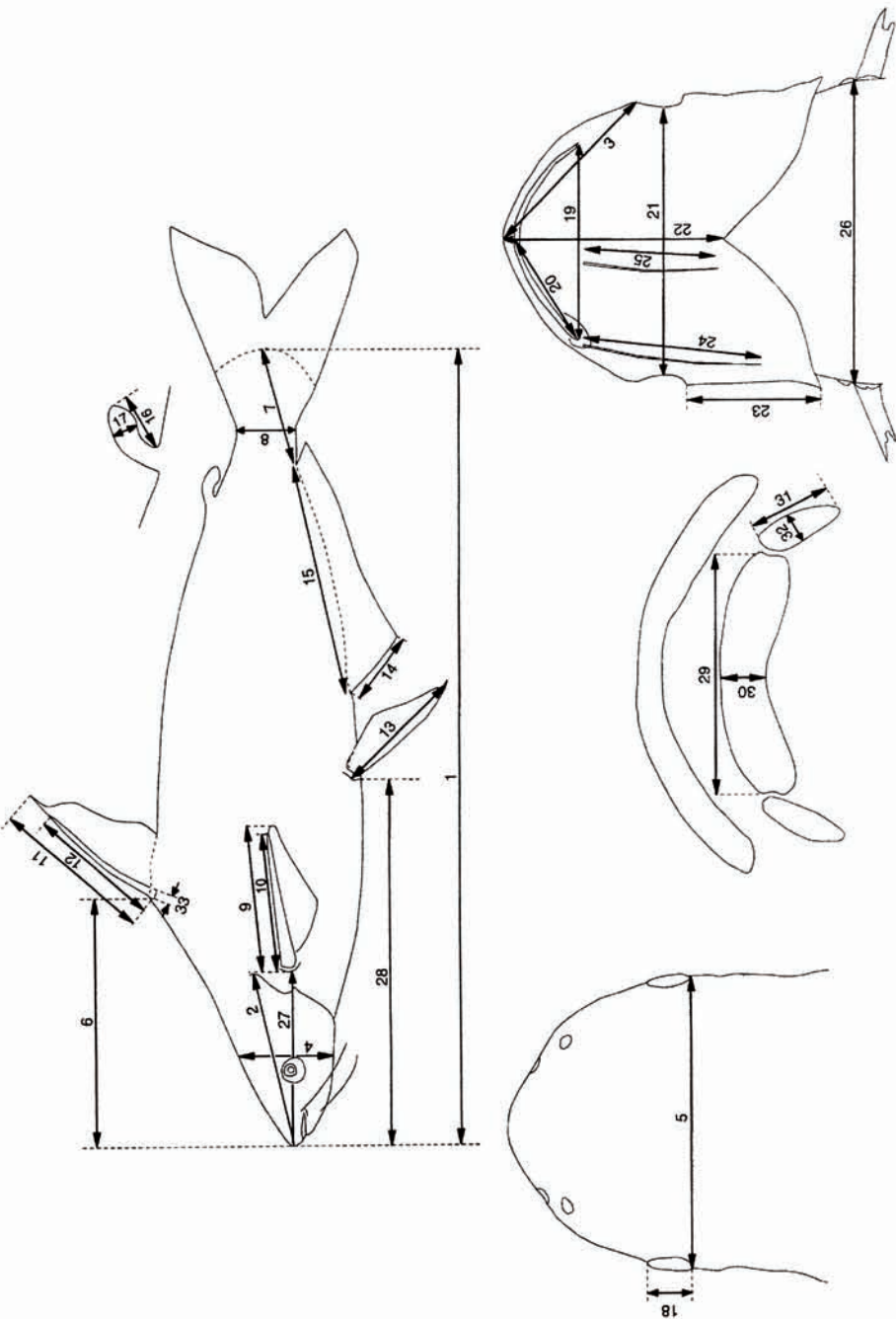


Fig. 1. - Measurements taken on *Pungasius* specimens: 1. Standard length (SL); 2. Head length (HL); 3. Snout length; 4. Head depth; 5. Head width; 6. Predorsal length; 7. Caudal peduncle length; 8. Caudal peduncle depth; 9. Pectoral spine length; 10. Pectoral fin length; 11. Dorsal spine length; 12. Dorsal fin length; 13. Pelvic fin length; 14. Anal fin height; 15. Anal fin length; 16. Adipose fin height; 17. Adipose fin width; 18. Eye diameter; 19. Mouth width; 20. Lower jaw length; 21. Interorbital distance; 22. Distance snout to isthmus; 23. Postocular length; 24. Maxillary barbel length; 25. Mandibular barbel length; 26. Body width; 27. Prepectoral length; 28. Prepectal length; 29. Vomerine width; 30. Palatine length; 31. Palatine width; 32. Dorsal spine width.

Chevey, 1930 lacking teeth in adults and mandibular barbels and including *P. gigas* Chevey, 1930 and *P. hypophthalmus* (Sauvage, 1878); (4) *Pangasius* (*Pangasius*) Valenciennes, 1840 for which no diagnostic features are given and including the remaining ten species (cf. *infra*). According to Vidthayanon and Roongthongbaisuree (1993), *Pangasius micronemus* Bleeker, 1847 should be included in *Pangasius* (*Pteropangasius*) and not in *Pangasius* (*Pangasius*). Rainboth (1996) mentioned the existence of additional species but without providing real evidences.

As part of a multidisciplinary project on two South-East Asian catfish families, sampling campaigns have been undertaken all over the distribution range of pangasiids. The material collected was identified using the keys in Roberts and Vidthayanon (1991). All known species were collected, except for *Pangasius myanmar* Roberts & Vidthayanon, 1991; the latter is only known from two specimens originating from Myanmar. In our collection, several specimens collected in Vietnam, Malaysia and Indonesia could not be identified with these keys. They keyed out as belonging to *Pangasius* (*Pangasius*). A detailed morphological analysis indicated that they represent a species new to science. Its description is given below.

MATERIAL AND METHODS

Eighty five specimens belonging to the subgenus *Pangasius* (*Pangasius*) have been examined (see Material examined below and Annex I). Except for the types of *P. djambal* Bleeker, 1846 which are housed in the Rijksmuseum voor Natuurlijke Historie (RMNH), Leiden, the Netherlands, all other material has been deposited in the Muséum national d'histoire naturelle (MNHN, Paris, France), the Institut de Recherche pour le Développement (IRD, Jakarta, Indonesia) and in the Museum Zoologicum Bogoriense (MZB, Cibinong, Indonesia).

Body length was measured using a graduated ruler of one meter. Using dial callipers, thirty three point to point measurements have been taken as follows (see also Fig. 1): standard length (SL) from tip of snout to caudal fin fold; head length from tip of snout to posterior border of operculum; snout length from tip of snout to anterior eye border; head depth taken at level of posterior eye border; head width taken at level of posterior eye border; predorsal distance from tip of snout to base of first dorsal spine; caudal peduncle length from base of last anal fin ray to middle of caudal fin fold; caudal peduncle length taken as minimum body depth; pectoral spine length from its base to its tip; pectoral fin length from pectoral spine base to tip of fin; dorsal spine length from base of first dorsal spine to tip of second spine; dorsal fin length from base of first dorsal spine to tip of fin; pelvic fin length from base to tip of fin; anal fin height from base of first anal fin ray to tip of longest ray; anal fin length from base of first ray to base of last anal ray; adipose fin height from base to tip; adipose fin width; eye diameter; mouth width; lower jaw length from tip of snout to corner of mouth; interorbital distance; distance snout to isthmus from tip of snout to isthmus; postocular length from posterior border of eye to posterior border of operculum; maxillary barbel length; mandibular barbel length; body width from left to right pectoral spine bases; prepectoral length from tip of snout to pectoral spine base; prepelvic length from tip of snout to first pelvic fin ray base; vomerine width; vomerine length; palatine length; palatine width; dorsal spine width taken at base of second dorsal spine.

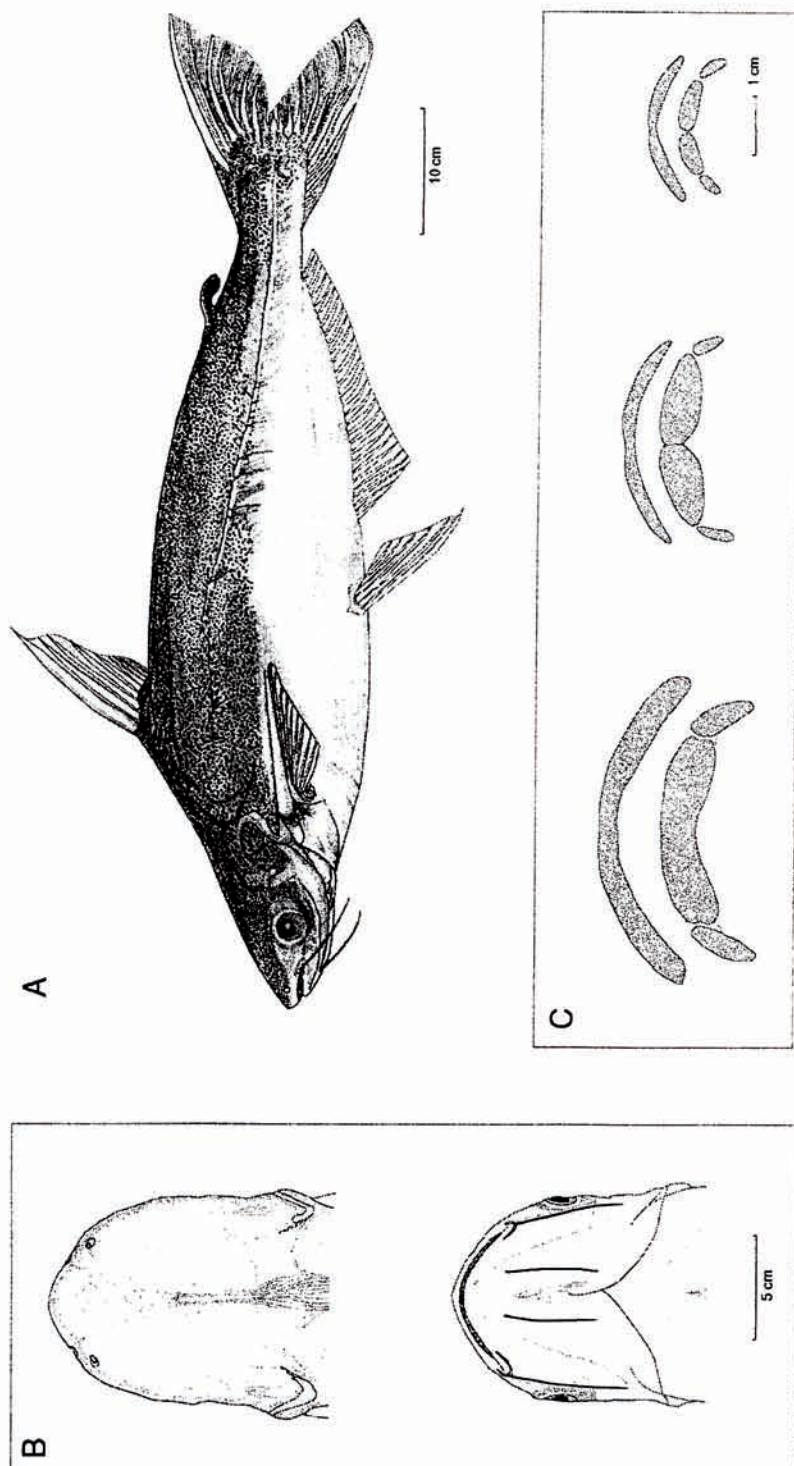


Fig. 2. - *Pangasius kunyit* sp. n. A: Lateral view, holotype; B: Dorsal and ventral outline of the head, holotype; C: Premaxillary, vomerine and palatine tooth plates, holotype (left), 450 mm SL specimen (middle), and 250 mm SL specimen (right).

Five counts were noted: total number of gill rakers on the first branchial arch, numbers of dorsal, anal, pectoral and pelvic fin rays.

Morphological observations include the shape of the swimbladder, the shape of palatine and vomerine tooth patches and the serrations of pectoral and dorsal spines.

***PANGASIUS KUNYIT* SP.N.**

(Fig. 2)

Material examined

Holotype. - MZB 10009, 627 mm standard length, a female collected at the village of Sangasanga, 30 km south-east of the town of Samarinda, delta of Mahakam River, East Kalimantan, Indonesia; coll. L. Pouyaud and J. Slembrouck; 12 Nov. 1998.

Paratypes. - 5 specimens: MNHN 1999-234, 702 mm SL, female; MNHN 1999-235, 467 mm SL, male; MNHN 1999-236, 416 mm SL, female; MNHN 1999-237, 371 mm SL, male; MNHN-1999-238, 305 mm SL; female; same data as holotype.

Other specimens examined. - 2 specimens: IRD 1996-VN700, 224 mm SL; IRD 1996-VN712, 196 mm SL; from Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand. - 5 spms: IRD 1996-VN839, 400 mm SL; IRD 1996-VN820, 354 mm SL; IRD 1996-VN824, 360 mm SL; IRD 1996-VN837, 303 mm SL; IRD 1996-VN838, 329 mm SL; from Binh Dai, Mekong delta, Vietnam; coll. S. Lenormand; 21 Aug. 1996. - 3 spms: IRD 1998-3033, 148 mm SL; IRD 1998-3038, 290 mm SL; IRD 1998-3043, 165 mm SL; from Sukau, Kinabatangan River, Sabah, Malaysia; coll. A. Pariselle. - 20 Nov. 1998. - 4 spms: IRD 1998-3044, 313 mm SL; IRD 1998-3045, 345 mm SL; IRD 1998-3046, 250 mm SL; IRD 1998-3048, 212 mm SL; Sandakan market, from Sandakan, Sabah, Malaysia; coll. A. Pariselle; 18 Nov. 1998. - 1 spm: IRD 1998-2030, 640 mm SL; Palembang market, from Musi River, Sumatra, Indonesia; coll. L. Pouyaud and W. Hadie; 15 Oct. 1998. - 3 spms: IRD 1997-46, 433 mm SL; IRD 1997-44, 452 mm SL; IRD 1997-42, 439 mm SL; purchased at Palembang market, from Musi River, Sumatra, Indonesia; coll. M. Legendre and L. Pouyaud; 27 Feb. 1997.

Diagnosis

Pangasius kunyit is distinguished from all other *Pangasius* species by the combination of the following characters: a somewhat spatulated (broad and rounded) head (snout length 40.0-53.4% HL; head depth 48.0-54.7% HL; head width 70.7-76.6% HL); short palatine toothplates (10.0-12.8% HL); a very robust dorsal spine (width of spine 9.25-11.2 times in its length).

Description

Based on the holotype, 5 paratypes and 18 spms. The results of measurements taken on the type series are given in table I.

Head long, somewhat spatuled, broad and rounded in dorsal and ventral outlines referring to body width. Anterior nostrils large and entirely situated on the anterior margin of the upper lip; posterior nostrils completely on the dorsal side of the head; distance between the anterior nostrils smaller than distance between posterior nostrils; premaxillary toothplate visible when mouth closed; vomerine toothplate large, consisting of two separate patches in young individuals becoming fused with age; palatine toothplates small throughout the various stages of development; premaxillary and palatine teeth

conical; vomerine teeth subgranular. Eyes latero-ventrally placed. Maxillary and mandibular barbels reaching beyond the eye but not reaching the posterior border of the operculum. Post-ocular distance long. Gill rakers on the complete first branchial arch: 29 in holotype and all paratypes, 25-28 in specimens from Sumatra; 20-23 in specimens from northern Kalimantan, 19-22 in specimens from Vietnam. Swimbladder with two or three chambers, never extending beyond the anterior half of anal fin.

Body deep, depth about 3.5 times in length. Dorsal with two spines; the first very small, hidden under the skin, the second very robust, its length 15.8-18.0% SL, its width 1.6-1.8% SL. 1.6-7 dorsal-fin rays. Small filament present on the first soft fin ray in some

Table I. - Measurements taken on the holotype and the paratypes of *Pangasius kunyit* sp. n.

	Holotype	Paratypes				
SL(mm)	627	305 - 702				
In % standard length :		N	Mean	Min.	Max.	SD
Head length	21.2	5	22.7	21.4	24.6	1.3
Caudal peduncle length	15.5	5	14.8	13.1	16.3	1.1
Caudal peduncle depth	7.7	5	7.8	7.3	8.2	0.4
Pectoral spine length	17.7	4	18.6	17.1	19.7	1.1
Pectoral fin length	18.7	5	19.7	17.2	22.3	1.8
Dorsal spine length	18.3	4	18.4	15.7	21.1	2.4
Dorsal fin length	19.3	5	20.2	17.1	22.8	2.4
Pelvic fin length	16.9	5	15.9	12.7	18.3	2.2
Anal fin height	12.4	3	12.6	11.8	13.9	1.1
Anal fin length	31.3	4	30.2	29.3	31.3	0.9
Body width	18.0	5	19.7	18.5	21.3	1.2
Predorsal length	33.7	5	36.6	34.3	41.3	2.7
Prepectoral length	20.4	5	22.6	21.1	24.6	1.4
Prepelvic length	42.6	4	44.3	41.3	45.9	2.1
In % head length :		N	Mean	Min.	Max.	SD
Snout length	53.4	5	50.1	48.0	52.1	1.7
Head depth	51.9	5	51.9	48.0	54.7	2.8
Head width	75.9	5	74.0	70.7	76.6	2.2
Adipose fin height	18.0	5	20.7	16.0	25.0	3.5
Adipose fin width	2.4	5	2.7	2.2	3.4	0.5
Eye diameter	12.8	5	12.3	9.9	13.3	1.4
Mouth width	56.4	5	52.1	47.0	55.3	3.2
Lower jaw length	31.6	5	34.1	31.0	39.4	3.2
Interorbital distance	69.9	5	68.2	66.0	72.3	2.4
Distance snout-isthmus	49.6	5	45.8	44.0	47.7	1.3
Postocular length	36.8	5	37.3	36.0	39.4	1.4
Maxillary barbel length	45.9	4	63.6	50.0	77.3	12.0
Mandibular barbel length	38.3	4	42.3	34.2	48.9	6.1
Vomerine width	28.6	5	29.5	22.4	33.0	4.1
Vomerine length	7.1	5	5.3	3.9	6.0	0.8
Palatine length	10.2	5	11.6	10.0	12.8	1.2
Palatine width	4.9	5	4.4	4.0	5.2	0.5

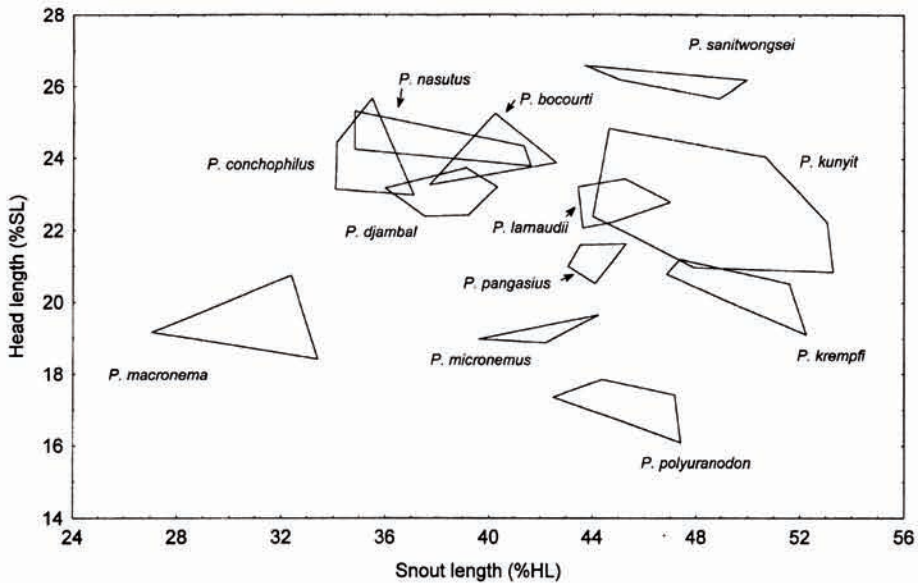


Fig. 3. - Head length in relation to the snout length in the species of the subgenus *Pangasius* (*Pangasius*).

specimens. Up to 44 strong serrae on the posterior edge of the spine; numerous minute serrae on the anterior side. Pectoral spine robust with over 40 strong serrae on the posterior side, numerous minute serrae on the anterior side. I.10-11 pectoral fin-rays, first soft ray sometimes filamentous. Pectoral fin reaching level of virtual line corresponding to last dorsal-fin ray basis. Six soft pelvic-fin rays; pelvic fin reaching up to fifth anal-fin ray basis; first pelvic-fin ray sometimes filamentous. Anal-fin rays with 30-33 soft fin rays. Adipose fin of notable size compared to many *Pangasius* species. Caudal fin short and somewhat lobed.

Maximal size observed 702 mm SL, \pm 830 mm total length.

Coloration

Live specimens generally goldish colored on lateral sides of head and body and on fins when freshly caught from the estuarine regions. Specimens collected from upper reaches of rivers are more whitish. Lower side of flanks and belly whitish. Upper part of flanks and dorsum darker.

Affinities

The new species does not display the subgeneric characters of *Pangasius* (*Neopangasius*), *P. (Pteropangasius)* and *P. (Pangasianodon)*. Awaiting the results of a phylogenetic analysis of the Pangasiidae, we consider it as belonging to the subgenus *P. (Pangasius)* and we compared it with the species recognised as valid in this subgenus. Within this subgenus, *P. kunyit* is distinguished from *P. micronemus*, *P. polyuranodon* Bleeker, 1852 and *P. macronema* Bleeker, 1851 by having a larger head (length 21.2-25.4% SL versus 16.3-21.1) (Fig. 3) and a broader body (width 18.0-22.8% HL versus 13.7-16.8). In fact, the broader body enables to separate the latter three species from all other species in this subgenus.

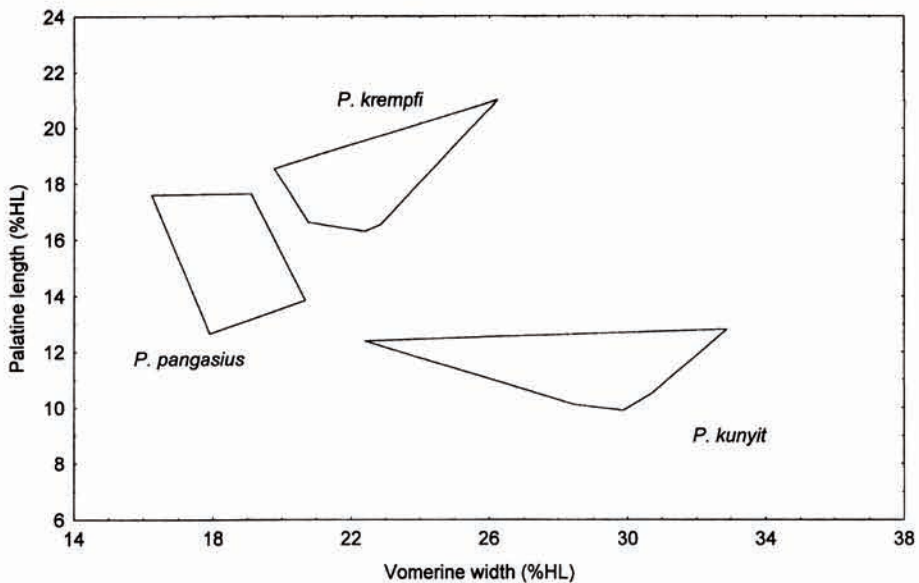


Fig. 4. - Palatine length in relation to the vomerine length in the species of the subgenus *Pangasius* (*Pangasius*).

The head length also allows to separate *P. kunyit* from *P. sanitwongsei* Smith, 1931 (length 21.2-25.4% HL versus 26.4-27.2) which has the longest head in this subgenus. The latter species is also differentiated by the presence of a very long filament on the first dorsal, pectoral, and pelvic fin rays.

Pangasius kunyit is distinguished from *P. djambal*, *P. bocourti* Sauvage, 1880, *P. nasutus* Bleeker, 1862 and *P. conchophilus* Roberts & Vidthayanon, 1991 by having a longer snout length (48.0-53.4% HL versus 34.1-42.7). *P. kunyit* can be separated from *P. conchophilus* in having a broader head (width 70.7-76.6% HL versus 52.4-62.9) and a shorter postocular distance (36.0-39.4% HL versus 41.9-51.3). The latter distance also enables to separate *P. kunyit* from *P. nasutus* (36.0-39.4% HL versus 39.5-47.2% HL).

Pangasius larnaudii Bocourt, 1866, differs from all species in the subgenus, including *P. kunyit*, by its unique black humeral spot.

Pangasius kunyit differs from *P. krempfi* Fang & Chaux, 1949 and *P. - Pangasius* (Hamilton, 1822) by smaller palatine tooth plates (palatine length 10.0-12.8 versus 12.6-21.1% HL) (Fig. 4). - *Pangasius kunyit* also has a larger vomerine toothplate compared to *P. - Pangasius* (width 22.4-33.0% HL versus 16.2-20.7) and has a stronger pectoral spine compared to *P. krempfi* (dorsal spine width 1.6-1.8% SL versus 1.1-1.5). In *P. kunyit*, the swimbladder has two or three chambers like in *P. krempfi*, but in the new species, the swimbladder never extends beyond the anterior half of the anal fin while in *P. krempfi* the posterior chamber extends to the end of the anal fin base or even beyond to the base of the caudal fin (Roberts and Vidthayanon, 1991).

We have not been able to examine specimens from *P. myanmar* Roberts & Vidthayanon, 1991, known only from two type specimens. According to Roberts and Vidthayanon (1991), this species is morphologically close to *P. - Pangasius* and *P. conchophilus*. We refer to the differences given above to separate it from *P. kunyit*. Moreover, from

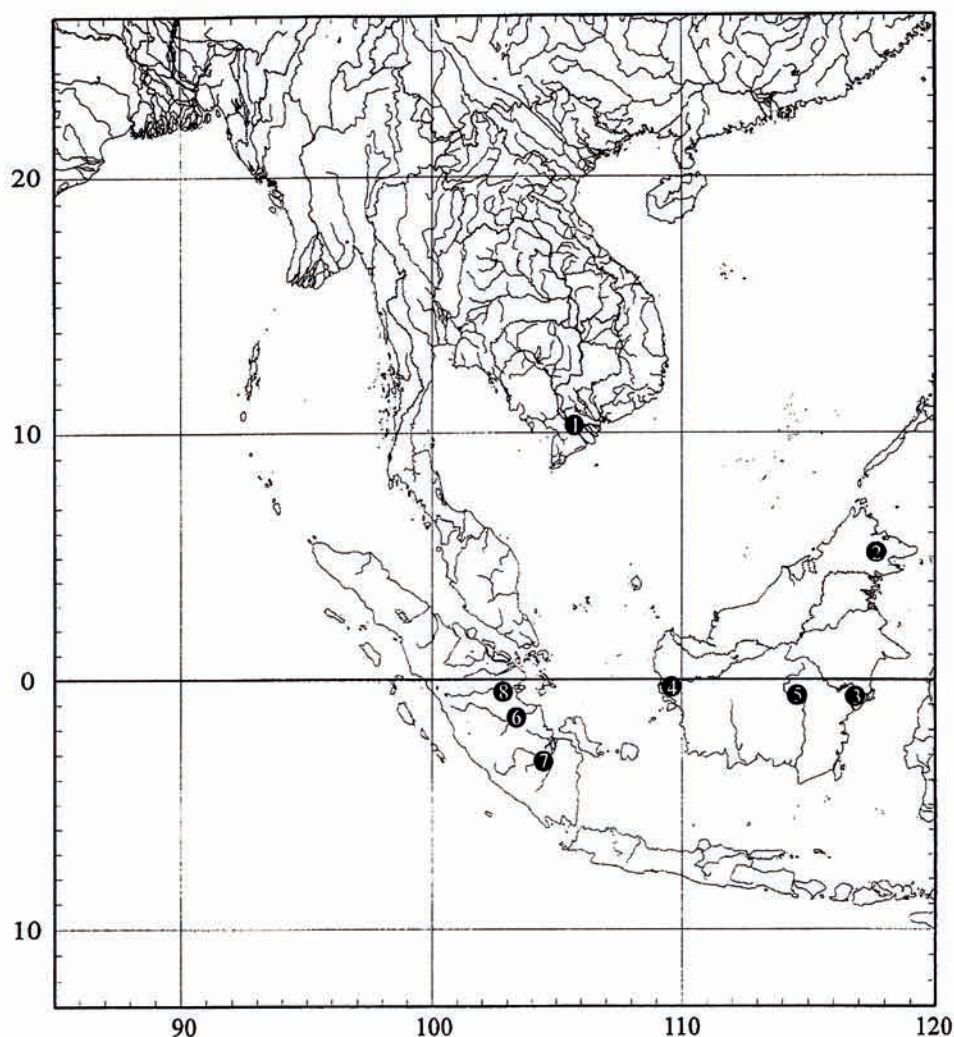


Fig. 5. - Geographical distribution of *Pangasius kunyit* sp. n.: ❶ Mekong Delta, Vietnam; ❷ Sukau and Sandakan, Kinabatangan River; Sabah, Malaysia ❸ Sangasanga, Mahakam River, Kalimantan, Indonesia (type locality); ❹ Pontianak, Kapuas River, Kalimantan; ❺ Muara Tewe, Barito River, Kalimantan; ❻ Jambi, Batang Hari River, Sumatra, Indonesia; ❼ Palembang, Musi River, Sumatra; ❽ Rengat, Indragiri River, Sumatra. Specimens observed in ❹ ❺ ❻ ❽ have not been examined morphometrically in the present paper.

the original description of *P. myanmar* and according to Vidthayanon (1993), the maxillary barbels are notably longer than in *P. kunyit*. According to Vidthayanon (1993) *P. myanmar* has the eyes dorso-laterally placed, while in *P. kunyit* they are latero-ventrally placed. In *P. myanmar*, the swimbladder has two chambers, the posterior confined to the abdominal cavity.

Distribution

Pangasius kunyit is presently known from most of the major drainages from Sumatra (Indonesia), where it was observed in the Musi River, in the Batang Hari River (Jambi and Muara Tebo markets; material not preserved) and in the Indragiri River (Rengat market; material not preserved). *P. kunyit* is also present in eastern Kalimantan, where it was found in the Mahakam River, in the Kapuas River (material not preserved) and in the Barito River (material not preserved). The species was also recorded from Sabah (Malaysia) in the Kinabatangan River. Finally, the species was found in the Mekong delta (Vietnam) (Fig. 5). In Sumatra the new species was usually identified as *P. pangasius* or *P. djambal*.

The distribution of *P. kunyit* is noteworthy because most species occurring in the Mahakam lowlands and in the Kinabatangan are either widespread throughout Asia or endemic to eastern Borneo (Kottelat, 1994). We have no information on its presence or absence in the rest of the Malay Peninsula and the Chao Phraya River in Thailand.

Habitat

The species has been collected in fresh and brackish waters. Fishermen even report it from plume waters beyond the estuaries. In all environments it lives in deeper waters. Two other species (*P. pangasius* and *P. krempfi*) have been reported to occur in seawater (Roberts and Vidthayanon, 1991). Remarkably, these two species are morphologically and genetically closely related with the new species. *P. krempfi* occurs sympatrically with *P. kunyit* in the Mekong delta.

Economic importance

The species has an important commercial value both in Vietnam and Indonesia, where its capture is highly appreciated by fishermen. It is considered as a candidate for aquaculture and its reproduction in captivity has already been achieved (Le and Pham, in press; as *Pangasius* sp.1).

Etymology

Kunyit: from the Javanese word for saffron, referring to its goldish colour. This is also the vernacular name used by local fishermen in Sumatra and Kalimantan.

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REFERENCES

- KOTTELAT M., 1994. - The fishes of the Mahakam River, East Borneo: An example of the limitations of zoogeographic analyses and the need for extensive fish surveys in Indonesia. *Trop. Biodivers.*, 2: 401-426.

- LE N.X. & T.L. PHAM, in press. - Preliminary results on the induced spawning of two catfish species, *Pangasius conchophilus* and *Pangasius* sp.1, in the Mekong Delta, Vietnam. In: Proc. of the Midterm Workshop of the Catfish Asia Project: The biological Diversity and Aquaculture of Clariid and Pangasiid Catfishes in South-East Asia (Legendre M. & A. Pariselle, eds).
- RAINBOTH W.J., 1996. - Fishes of the Cambodian Mekong. 169 p. FAO Species Identification Field Guide for Fishery Purposes. Rome: FAO.
- ROBERTS T.R. & C. VIDTHAYANON, 1991. - Systematic revision of the Asian catfish family Pangasiidae, with biological observations and descriptions of three new species. *Proc. Acad. Nat. Sci. Philad.*, 143: 97-144.
- TEUGELS G.G., 1996. - Taxonomy, phylogeny and biogeography of catfishes (Ostariophysi, Siluroidei): An overview. *Aquat. Living Resour.*, 9: 9-34.
- VIDTHAYANON C., 1993. - Taxonomic revision of the catfish family Pangasiidae. Ph. D. thesis, 203 p. Tokyo Univ. of Fisheries.
- VIDTHAYANON C. & S. ROONGHONGBAISUREE, 1993. - Taxonomy of Thai riverine catfishes family Schilbeidae and Pangasiidae. *Natl. Int. Fish. Inst. Tech. Pap.*, 150: 1-157.

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Annex I. Comparative material examined.

Pangasius krempfi. 5 specimens: IRD 1996-VN819, 443 mm SL; IRD 1996-VN818, 329 mm SL; IRD 1996-VN808, 329 mm SL; IRD 1996-VN804, 231 mm SL; IRD 1996-VN803, 176 mm SL; from Binh Dai, mouth of the Mekong River, Vietnam; coll. S. Lenormand; 2 Aug. 1996. - *Pangasius sanitwongsei*. 5 spms: IRD 1996-VN723, 420 mm SL; IRD 1996-VN721, 348 mm SL; IRD 1996-VN722, 336 mm SL; IRD 1996-VN720, 329 mm SL; IRD 1996-VN739, 294 mm SL; from Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand; 6 Jul. 1996. - *Pangasius larnaudii*. 5 spms: IRD 1996-VN741, 416 mm SL; IRD 1996-VN746, 361 mm SL; IRD 1996-VN740, 305 mm SL; IRD 1996-VN757, 292 mm SL; IRD 1996-VN758, 294 mm SL; from Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand; 20 Aug. 1996. - *Pangasius conchophilus*. 5 spms: IRD 1996-VN848, 344 mm SL; IRD 1996-VN845, 346 mm SL; IRD 1996-VN843, 328 mm SL; IRD 1996-VN840, 308 mm SL; IRD 1996-VN844, 236 mm SL; from Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand; 20 Aug. 1996. - *Pangasius nasutus*. 1 spm: IRD 1997-1353, 466 mm SL; purchased at the market of Rengat, originating from the Indragiri River, Sumatra, Indonesia; coll. J. Slembrouck; 15 May 1997. - *Pangasius nasutus*. 4 spms: IRD 1997-35, 405 mm SL; IRD 1997-148, 295 mm SL; IRD 1997-92, 265 mm SL; IRD 1997-90, 166 mm SL; purchased at the market of Palembang, originating from the Musi River, Sumatra, Indonesia; coll. M. Legendre and L. Pouyaud; 27 Feb. 1997. - *Pangasius pangasius*. 5 spms: IRD 1998-1809, 543 mm SL; IRD 1998-1808, 460 mm SL; IRD 1998-1810, 431 mm SL; IRD 1998-1812, 339 mm SL; IRD 1998-1811, 325 mm SL; purchased at the market of Chandpur, Ganges River, Bangladesh; coll. A. Pariselle; 25 Oct. 1998. - *Pangasius macronema*. 5 spms: IRD 1996-799, 192 mm SL; IRD 1996-782, 175 mm SL; IRD 1996-780, 190 mm SL; IRD 1996-799, 175 mm SL; IRD 1996-781, 161 mm SL; Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand; 21 Aug. 1996. - *Pangasius polyuranodon*. 5 spms: IRD 1997-122, 603 mm SL; IRD 1997-119, 480 mm SL; IRD 1997-120, 450 mm SL; IRD 1997-118, 348 mm SL; IRD 1997-117, 354 mm SL; purchased at the market of Jambi, originating from the Batang Hari River, Sumatra, Indonesia; coll. M. Legendre and L. Pouyaud; 1 Mar. 1997. - *Pangasius micronema*. 5 spms: IRD 1997-517, 382 mm SL; IRD 1997-532, 328 mm SL; IRD 1997-505, 306 mm SL; IRD 1997-504, 266 mm SL; IRD 1997-529, 265 mm SL; Dam Karet, near the town of Jombang, Brantas River, East of Java; coll. J. Slembrouck and D. Sadili; April 1997. - *Pangasius bocourti*. 5 spms: IRD 1996-VN899, 323 mm SL; IRD 1996-VN880, 307 mm SL; IRD 1996-VN881, 278 mm SL; IRD 1996-VN898, 239 mm SL; IRD 1996-VN887, 248 mm SL; Chau Doc, Mekong Delta, Vietnam; coll. S. Lenormand; 21 Aug. 1996. - *Pangasius djambal*. 1 spm: IRD 1998-560, 528 mm SL; Muara Tewe, Barito River, Central Kalimantan, Indonesia; coll. A. Pariselle; Mar. 1998. - *Pangasius djambal*. 2 spms: IRD 1997-43, 439 mm SL; IRD 1997-67, 422 mm SL; purchased at the market of Palembang, originating from the Musi River, Sumatra, Indonesia; coll. M. Legendre and L. Pouyaud; 27 Feb. 1997. - *Pangasius djambal*. 2 spms: IRD 1997-97, 279 mm SL; IRD 1997-157, 271 mm SL; purchased at the market of Jambi, originating from the Batang Hari River, Sumatra, Indonesia; coll. M. Legendre and L. Pouyaud; 1 Mar. 1997. - *Pangasius djambal*. RMNH 6854, lectotype (designated as neotype by Roberts and Vidthayanon, 1991), 373 mm SL; E. Indies presumably from Java, coll. P. Bleeker; RMNH 31192, paralectotypes, 6 spms, 113-207 mm SL; same data as lectotype.